IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A single crystal diamond prepared by CVD and having at least one of the following characteristics:

(i) in the off state, a resistivity R_1 greater than 1×10^{12} Ω cm at an applied field of 50 V/μm measured at 300 K;

(ii) ~~A high breakdown voltage in the off state, and high current with long carrier life time in the on state~~ a μτ product measured at at an applied field of 50 V/μm and 300 K greater than $1.5 \times 10^{-6} cm^2V^{-1}$ where, μ is the mobility and τ is the lifetime of the charge carriers;

(iii) an electron mobility (μ_e) measured at 300K greater than 2400 $cm^2V^{-1}s^{-1}$;

(iv) a hole mobility (μ_h) measured at 300K greater than 2100 $cm^2V^{-1}x^{-1}$; and

(v) a high charge collection distance greater than 150 μm measured at an applied field of 1 V/μm and 300 K.

Claim 2 (Withdrawn): A single crystal diamond according to claim 1 which has resistivity greater than 2×10^{13} Ω cm at an applied field of 50 V/μm measured at 300 K.

Claim 3 (Withdrawn): A single crystal diamond according to claim 1 which has a resistivity R_1 greater than 5×10^{14} Ω cm at an applied field of 50 V/μm measured at 300 K.

Claim 4 (Withdrawn): A single crystal diamond according to claim 1 which has a μτ product measured at 300 K greater than $1.5 \times 10^{-6} cm^2V^{-1}$ where, μ is the mobility and τ is the lifetime of the charge carriers.

Claim 5 (Withdrawn): A single crystal diamond according to claim 4 which has a $\mu\tau$ product measured at 300 K of greater than 4.0×10^{-6} cm^2V^{-1}.

Claim 6 (Withdrawn): A single diamond according to claim 4 which has a $\mu\tau$ product measured at 300 K greater than $6.0 \times 10^{-6} cm^2V^{-1}$.

Claim 7 (Withdrawn): A single crystal diamond according to claim 1 which has an electron mobility (μ_e) measured at 300 K greater than 3000 $cm^2V^{-1}s^{-1}$.

Claim 8 (Withdrawn): A single crystal diamond according to claim 7 which has an electron mobility (μ_e) measured at 300 K greater than 4000 $cm^2V^{-1}s^{-1}$.

Claim 9 (Withdrawn): A single crystal diamond according to claim 1 which has a hole mobility measured at 300 K greater than 2500 $cm^2V^{-1}s^{-1}$.

Claim 10 (Withdrawn): A single crystal diamond according to claim 9 which has a hole mobility measured at 300 K greater than 3000 $cm\ ^2V^{-1}s^{-1}$.

Claim 11 (Previously Presented): A single crystal diamond according to claim 1 which has a charge collection distance measured at 300 K greater than 400 μm.

Claim 12 (Previously Presented): A single crystal diamond according to claim 11 which has a charge collection distance measured at 300 K greater than 600 μm.

Claim 13 (Previously Presented): A single crystal diamond according to claim 1 which has each of the characteristics (i), (ii), (iii), (iv) and (v).

Claim 14 (Withdrawn): A method of producing a single crystal diamond according to claim 1 which includes the steps of providing a diamond substrate having a surface which is substantially free of crystal defects, providing a source gas, dissociating the source gas and allowing homoepitaxial diamond growth on the surface which is substantially free of crystal defects in an atmosphere which contains less than 300 parts per billion nitrogen.

Claim 15 (Withdrawn): A method according to claim 14 wherein the substrate is a low birefringence type Ia or IIb natural, Ib or IIa high pressure/high temperature synthetic diamond.

Claim 16 (Withdrawn): A method according to claim 14 wherein the substrate is a CVD synthesized single crystal diamond.

Claim 17 (Withdrawn): A method according to claim 14 wherein the surface on which diamond growth occurs has a density of surface etch features related to defects below 5 x $10^3/mm^2$.

Claim 18 (Withdrawn): A method according to claim 14 wherein the surface on which diamond growth occurs has a density of surface etch features related to defects below $10^2/mm^2$.

Claim 19 (Withdrawn): A method according to claim 14 wherein the surface on which the diamond growth occurs is subjected to a plasma etch to minimise surface damage of the surface prior to diamond growth.

Claim 20 (Withdrawn): A method according to claim 19 wherein the plasma etch is an *in situ* etch.

Claim 21 (Withdrawn): A method according to claim 19 wherein the plasma etch is an oxygen etch using an etching gas containing hydrogen and oxygen.

Claim 22 (Withdrawn): A method according to claim 21 wherein the oxygen etch conditions are a pressure of 50 to 450 x 10^2Pa, an etching gas containing an oxygen content of 1 to 4%, an argon content of up to 30% and the balance hydrogen, all percentages being by volume, a substrate temperature of 600 to 1100°C, and an etch duration of 3 to 60 minutes.

Claim 23 (Withdrawn): A method according to claim 19 wherein the plasma etch is a hydrogen etch.

Claim 24 (Withdrawn): A method according to claim 23 wherein the hydrogen etch conditions are a pressure of 50 to 450 x 10^2Pa, an etching gag containing hydrogen and up to 30% by volume argon, a substrate temperature of 600 to 1100°C and an etch duration of 3 to 60 minutes.

Claim 25 (Withdrawn): A method according to claim 19 wherein the surface on which the diamond growth occurs is subjected to both an oxygen and a hydrogen etch to minimise surface damage of the surface prior to diamond growth.

Claim 26 (Withdrawn): A method according to claim 25 wherein the oxygen etch is followed by a hydrogen etch.

Claim 27 (Withdrawn): A method according to claim 19 wherein the surface R_A of the surface on which the diamond growth occurs is less than 10 nanometers prior to that surface being subjected to the plasma etching.

Claim 28 (Withdrawn): A method according to claim 14 wherein the diamond growth takes place in an atmosphere which contains less than 100 ppb nitrogen.

Claim 29 (Withdrawn): A method according to claim 14 wherein the surface on which diamond growth occurs is substantially a {100}, {110}, {113} or {111} surface.

Claim 30 (Withdrawn): A method according to claim 14 wherein the dissociation of the source of the source gas occurs using microwave energy.

Claim 31 (Previously Presented): An electronic element comprising a single crystal diamond according to claim 1.

Claim 32 (Canceled).

Claim 33 (Previously Presented): An optic-electric switch comprising a single crystal diamond of claim 1 as a component.

Claim 34 (Previously Presented): A detector element or switching element comprising a single crystal diamond according to claim 1.

DISCUSSION OF THE AMENDMENT

Claim 1 has been amended by replacing the recital of characteristic (ii) with more objective language, as supported in the specification at page 3, last paragraph.

No new matter is believed to have been added by the above amendment. Claims 1, 11-13, 31, 33 and 34 remain active in the application. Claims 2-10 and 14-30 stand withdrawn from consideration. Claims 14-30 are rejoinable method claims.